THE POSSIBILITY OF PHENOMENAL FISSION

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Summary

The problem of personal identity can be expressed as follows: what makes a self existing at one time the same self as someone existing at a later time? Proponents of phenomenal continuity accounts claim that the answer lies in the continuation of phenomenal states over time: self A survives as self B if and only if A's phenomenal states are continuous with B's phenomenal states. In this paper, I will discuss one such phenomenal continuity account which is expounded by Barry Dainton.

In assessing the viability of a philosophical account, it is useful to see how the account deals with some of the problems that plague the field in general. Personal fission is a well-known issue that philosophers of personal identity have been grappling with since the days of John Locke. My goal in this paper is to show that despite what Dainton claims, his account is not compatible with the possibility of fission. Following which, I will argue that the incompatibility may in fact work to his advantage, since personal fission is absurd for a number of reasons. Indeed, given the absurdity of personal fission, we ought to prefer Dainton's account over other accounts of personal identity which are compatible with the possibility of personal fission.

Chapter 1

Introduction

What are the criteria for a person, or a self, to persist or survive over time?[1] Various answers can be given to this question. One might think that a person persists over time if she retains the same physical body over time. Alternatively, one might think that persistence is ensured if the person's current psychological or phenomenal properties are connected in an appropriate manner to some later psychological or phenomenal properties. In this paper, I examine one recent attempt to provide such a set of criteria for personal persistence over time: Barry Dainton's Simple Conception account, a personal identity account which claims that phenomenal continuity is essential to personal persistence.[2]

The word "person" carries with it much conceptual baggage; in different contexts, it could have social, moral and even legal implications. What we are interested here in the personal identity debate however, can be abstracted away from such implications. We are not interested here in knowing if we are the same as an earlier person in the sense that we are legally or morally responsible for what she did, even though these are interesting and important issues in themselves. What we want to know is whether we will continue to exist in the future, regardless of whatever practical implications this existence (or non-existence) may have. I differentiate the two issues in this paper by opting for the terms "self"

[1] In this paper, I will take "persistence" to mean the same thing as "survival". The two terms, and their cognates, will be used interchangeably.
[2] Dainton 2006; Dainton and Bayne 2005.

or “subject” (used interchangeably), both of which are intended to be used in the same way as “person” but free of any social, moral or legal implications of the existence of a person in the future. I assume that this can be done. (Some authors will disagree—they argue that the concept of “person” is necessarily tied to its social or moral implications (c.f. Greenwood 1994, Chapters 6, 7). I shall ignore that debate here.)

Before we can specify the criteria for personal persistence, we need to know what kind of beings selves essentially are. It can be said that we, as selves, are living things; that we are things with a certain biological structure; that we are moral or social beings; that we are thinking beings; or that we are beings that are able to have experiences. The answer that we give to this second question influences to a large extent the answer we can give to the first. If I am essentially a being that can have thoughts, then it is natural to think that one of the criteria for me to persist over time is the continuation of the ability to have thoughts. Or to put it differently, if I can persist over time even though I lose the ability to have thoughts, then it seems that I am not essentially a being that can have thoughts.

Barry Dainton thinks that selves are essentially beings that can have experiences. According to him, one of the criteria for selves to persist over time is continuing to be able to have experiences. (I will discuss at the end of Chapter 2 why he thinks that the ability to have experience is essential to personal persistence.) Continuing to be able to have experiences is necessary for a self to persist over time, however, it is not sufficient on its own; for a self to persist over

time, she must be able to have experiences which are related *in an appropriate manner* to the experiences of a later self.

The first part of this paper is devoted to understanding what it means, according to Dainton, for experiences to be related to each other "in an appropriate manner." I will do so by examining Dainton's account in relation to the possibility of personal fission (or fission for short), where fission is defined as the process in which a self is split into two distinct selves at the same time.[3] Thus we say that a self has undergone fission if she persists or survives as two or more selves at the same time. My aim in this paper is to argue that Dainton's account is incompatible with the possibility of fission. Thus, if it turns out that fission is possible, then we have a good reason to think that Dainton's account is wrong. On the other hand, if fission is implausible, then we have a prima facie reason to favor Dainton's account over other accounts of personal identity which are compatible with the possibility of fission.

My secondary aim, which I will take up in the later chapters, is to argue that fission is implausible. In doing so, I suggest that Dainton's account is preferable to other personal identity accounts which are compatible with the possibility of fission. However, the argument that Dainton's account is incompatible with the possibility of fission is separate and distinct from the argument against the possibility of fission. Hence, when discussing the first

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[3] David Lewis set up the problem of fission in terms of the formal character of identity and survival in his paper "Survival and identity". Parfit refers to the case of a man who divides like an amoeba in his paper "Personal identity" in *The Philosophical Review* (Vol. 80, No.1 p.3-27). Others who have discussed the problem of fission include David Wiggins in *Identity and Spatio-temporal Continuity* (Oxford, 1967, p.50), Sydney Shoemaker in "Persons and their Pasts" in *American Philosophical Quarterly* (Vol. 7, 4, 1970 p.282), and in *Self-knowledge and Self Identity* (Ithaca, N.Y., 1963, p.22).

argument, I will remain neutral on whether it is good for an account to be compatible with fission.

We should understand why it seems that fission is possible in the first place. We can imagine the following scenario[4]: a man's brain is divided and each half of the brain is transplanted into a different body. After the surgery, each body (with its respective half of the brain) is able to report on its experiences before and after the surgery, and even during the surgery itself. Both of them give the same story. There seem to be three possibilities with regards to the survival of the original self:

(1) The self does not survive.

(2) The self survives as just one of the two selves.

(3) The self survives as both selves.

Derek Parfit argues that since a self can likely survive half of his brain being removed, it seem unreasonable to think that he cannot survive when both halves of the brain are successfully transplanted.[5] Thus option (1) is ruled out. Similarly, he argues that option (2) is ruled out since it is arbitrary to claim that the self survives as only one of the two people, if he survives at all. Thus there is only option (3) left. According to Parfit, accounts of personal identity have to be open to the possibility of fission—a self can survive as two or more selves who exist at the same time.

The particular account of personal identity that Parfit endorses is a psychological continuity account; according to such accounts, a self survives as a

[4] This is adapted from Parfit's "Personal identity".
[5] Parfit frames his discussion in terms of "persons" instead of "selves", but the crux of the issue is not affected. (Parfit 1971, p.4)

later self if and only if his psychological states are causally connected in an appropriate manner to the psychological states of the later self. Since causal relationships can be one-to-many, it is possible for a self to have psychological states that are causally connected to the psychological states of more than one self at the same time. Hence the fission scenario just described is possible, according to psychological continuity accounts, if the two later selves have psychological states (like memories and character) which are causally connected to the psychological states of the original self in an appropriate manner.

It is a different matter for Dainton's version of the phenomenal continuity account: I will argue that if Dainton's version of the phenomenal continuity account is correct, then fission is not possible. If personal persistence is defined in terms of phenomenal continuity, then it is impossible for a self to be phenomenally connected to two later selves existing at the same time, i.e. option (3) is not possible. Explicating why it is impossible for a self to be phenomenally connected to two or more later simultaneous selves will be the focus of Chapter 4.

In chapter 2, I will discuss Dainton's phenomenal continuity account—the Simple Conception account. At the same time, I will discuss one of the problems that plague Dainton's account. Since his account defines personal persistence in terms of the relationship between experiences, it needs to account for how a self can persist through periods of experience-free states. This is known as the "bridging problem." Tackling the bridging problem is necessary since the possibility of selves persisting through periods of experience-free states may bear on the question of whether Dainton's account is compatible with personal fission.

In chapter 3, I examine the various ways a self can be thought to undergo fission. Here, I will argue that there is only one coherent way of construing fission: a self undergoes fission if and only if he survives as two *numerically distinct* selves.

In chapter 4, I will examine some features of Dainton's account that are incompatible with the possibility of fission. The first feature is phenomenal holism. Dainton claims that there is some form of holism which holds between earlier and later experiences. This phenomenal holism, I will argue, prevents selves from undergoing fission. The second feature is the nature of co-consciousness: given how Dainton characterizes co-consciousness, it is again impossible for selves to undergo fission.

In chapter 5, I will discuss whether we can make sense of personal fission from a first person perspective. I argue here that we cannot in fact conceive of personal fission, and that this cast doubts on the possibility of fission.

Some disclaimers: the question of whether experiences are physical entities will not be covered in this paper. Nothing discussed here hinges on the ontological status of experiences. If experiences are wholly physical entities, then it simply means that if personal persistence is dependent on phenomenal continuity, then personal persistence is a wholly physical affair.

A second thing to note is that phenomenal realism is being taken as a background assumption of Dainton's account. Phenomenal realism is the view that conscious experience is a part of the world alongside other equally real parts of it (like tables, mountains, etc.), whatever its detailed intrinsic nature may be.

According to phenomenal realism, experiences are a basic feature of the world; they cannot be reduced to things that are non-experiential in nature. This is what Dainton meant by "taking experience seriously".[6] I will not dispute the truth of this assumption in this paper.

[6] Dainton 2006 p.1

Chapter 2

The Phenomenal Continuity Account: The simple conception

Before we can meaningfully talk about the relationship between experiences, we must first know what experiences are. There are many types of experience that we can have, including but not limited to perceptual experiences, emotions, and mental images, etc. In *The Conscious Mind*, David Chalmers notes,

> Consciousness can be startlingly intense. It is the most vivid of phenomena; nothing is more real to us. But it can be frustratingly diaphanous: in talking about conscious experience, it is notoriously difficult to pin down the subject matter. (Chalmers 1996. p.3)

Attempting to define *experience* in more fundamental terms seems ultimately a fruitless and circular endeavor; experience is as basic as any concept can be. We, however, do know what it is to have experiences. Think about what it is like to see a flower or the setting sun. There is a certain feel to be basking in the sun at the beach, which is markedly different from the feel of being seated in a room listening to a lecture. There is something it is like to be angry, or to be feeling anxious about your examinations. We may not be able to describe exactly what these feelings are, but we are certainly familiar with them.

Experiences that belong to a single subject at a time appear to be intimately related to, or unified with one another. Given how difficult it is to describe what an experience is, it is just as difficult, if not more so, to describe what the unity between experiences is like. Let us stipulate then, that when we are

talking about the unity between simultaneous experiences, we are referring to the awareness of all the simultaneous experiences we have at the same time. The perception of this unity may be something that cannot be described adequately in words, but at least we know that it is the feeling we get when we are aware of all the said experiences at the same time.

To get a grasp on what this feeling of unity is, it will be helpful to reflect on our own experiences. Think about the experience of eating an ice-cream: the feeling of the cold and soft dessert in your mouth does not occur in complete isolation from the other experiences that you are having at the same time. You are conscious of your surroundings to varying degrees: maybe you are listening to a piece of music as you are enjoying your ice-cream, while being seated in a comfortable armchair in your room. The experience of eating the ice-cream is somehow part of the experience of being in the room, which also includes the experience of being seated in an armchair. In short, experiences that you have at the same time are more or less unified with each other. If someone were to ask you what you are doing while you are listening to the music in your room, you are able to answer that you are eating an ice-cream while being seated in an armchair. The experience of eating an ice-cream does not occur to the exclusion of other experiences—your other senses do not, as it were, "black out," leaving you only with the sensation of the ice-cream in your mouth.

When you clap your hands, you hear a sound which appears to come from between your hands. The visual image is somehow unified with the auditory experience such that we are naturally inclined to think, though falsely, that the

visual image produces the auditory experience. When you see yourself touching a table, your brain naturally tells you that the object of your sight and the object of your touch are one and the same thing. It seems that such unities amongst our perceptual experiences are ubiquitous to the point that we tend to overlook them unless we specially reflect upon our experiences.

If your experiences at a time are completely isolated from each other, you would not be able to make comparisons between them. Yet it is a fact that we are able to do so. Imagine that you have two buckets of water, one of a higher temperature than the other. If you dip each of your hands into one bucket, one hand will feel hotter than the other. This means that you are experiencing two different temperatures at the same time. It also means that you are able to compare these two experiences. You will not be able to do so if the two experiences are not related to each other at all.

The perception of change is the unity of experiences over time

So far we have only been talking about synchronic experiences that belong to a single subject. However, there is a similarly intimate relationship between successive experiences which belong to a single subject. For one, we are able to perceive a certain order to experiences that happen in succession. The fact that we are able to perceive some experiences as earlier and others as later speaks of our (implicit) awareness of the intimate relationship between these successive experiences. If experiences are not related in such a way, we would not be able to

tell that one experience comes before or after another, or indeed, if there is any order at all to the presentation of experiences.

To perceive change just is to have an earlier experience giving way to a later experience. For example, you are perceiving change when you see a bird flies across the sky, or when you see your fingers typing on the keyboard. Without the perception of change, all we can experience are frames of still pictures in succession.

An experience of change is not merely a succession of experiences; it seems logically possible that one can have a succession of experiences without perceiving that her experiences are changing from one into another. Suppose there is a race of aliens whose brains are naturally brainwashed at a two second interval—that is, their brains are regularly wiped clean of any physical or mental changes that have been effected in the last two seconds. Within each two-second block, it is not inconceivable to think that their experiences will be much like ours—constantly flowing and ever changing. But between the two-second block, there is probably no experience that "reports", as it were, the succession of the last experience in the earlier two-second block and the first experience in the later two-second block. It seems then that at every two-second interval, these aliens would have a succession of experiences but no experience of succession.

The unity of the experiences, or the perception of change, must have been the result of some processing done in our brains. This perception of change is most probably imposed on the world by our experiential structure. This is

corroborated by the fact that some victims of severe brain damage suffer from abnormal or impaired perception of change.[7]

In some cases, the unity between successive experiences is more obvious. In the case of music, it seems that we are able to experience the tune, *as of* hearing a tune, instead of merely a collection of notes. The four-note (short-short-short-long) opening of Beethoven's Fifth Symphony is probably familiar to most so I shall use it as my example. The tune is somehow over and above the collection of the individual notes. This can be seen by how we can vary the pitch of the individual notes, and yet the tune is still recognizably the same. If you take away any of the four notes, the identity of the tune is utterly destroyed.

In the case of speech, we are able to understand words which consist of more than one syllable. The word "understand" itself is made up of three syllables, and uttering only the first two syllables will provoke an understanding quite different from the whole word. In hearing the word "understand", it seems that we perceive a unity in meaning quite over and above the individual syllables.

William James gave a nice description of this diachronic unity:

> The unit of composition of our perception of time is a duration, with a bow and a stern, as it were—a rearward- and a forward-looking end. It is

[7] There is an extremely rare neuropsychological disorder Akinetopsia, otherwise known as motion blindness, which affects the brain's ability to perceive motion. Patients inflicted with this disorder are unable to perceive motion, even though they are able to perceive stationary objects without any difficulty. In a paper by Zihl, J, D von Cramon and N Mai, they reported a case of a woman who "had difficulty, for example, in pouring tea or coffee into a cup because the fluid appeared to be frozen, like a glacier. In addition, she could not stop pouring at the right time since she was unable to perceive the movement in the cup (or a pot) when the fluid rose." Another case mentioned in the same paper involves a 58-year-old patient who "could no longer perceive the movement of visual objects. She described her perceptual experience of a moving target as if the visual stimulus remained stationary but appeared at different successive positions." The authors suggest that the disorder may be due to bilateral damage to the posterior brain. (see Zihl, J, D von Cramon and N Mai, 1983)

> only as parts of this duration-block that the relation of succession of one end to the other is perceived. We do not first feel one end and then feel the other after it, and from the perception of the succession infer an interval of time between, but we seem to feel the interval of time as a whole, with its two ends embedded in it. (James 1952, p. 399)

Dainton's Simple Conception account is an attempt to describe this intimate relationship between experiences over time and at a time. He proposes that this relationship that holds between experiences within a single subject is a form of primitive relationship, which he calls *co-consciousness*. All experiences that belong to a subject at a time and over time are supposed to be related in one way or the other by co-consciousness. Since co-consciousness is supposed to be a basic experiential relationship, resisting any attempts to reduce it to more fundamental elements, it would be helpful to contrast Dainton's account with another account—the Awareness thesis.

The Awareness thesis

According to the Awareness thesis, there is an apparent unity amongst our experiences because our experiences are presented to a single act of awareness.[8] For the Awareness thesis, there is a two-level structure to conscious experience: at the first level, there are the experiential contents while at the second level there is

[8] See Husserl 1991, Broad 1923. See also Lockwood 1989, Ward 1887 and 1918, for a discussion of the awareness thesis. Dainton provides a nice characterization of the various forms of the awareness thesis in his book *Stream of consciousness*. (Dainton 2006)

the act that reveals them. Somewhat metaphorically, we can think of awareness as a beam of light shining down on a set of experiential contents and revealing them to the subject. To be aware of experiences just is for the experiences to be revealed to this awareness. Less metaphorically, we can cash awareness out in functional terms: to be aware of some experiences just is for these experiences to be available to you for deliberation, for verbal reports, or for directing your behavior.

In a previous example, I talked about how we experience a clapping sound as *coming from* the visual image of a pair of clapping hands. According to the Awareness thesis, we experience such a unity simply because both the visual image and the auditory experience are presented to a single act of awareness. Deikman describes the doctrine as follows:

> Thus experience is dualistic, not the dualism of mind and matter, but the dualism of awareness and the contents of awareness. To put it another way, experience consists of the observer and the observed. Our sensations, our images, our thoughts – the mental activity by which we engage and define the world – all are part of the observed. In contrast, the observer – the 'I' is prior to everything else; without it there is no experience of existence. (Deikman 1996: pp. 351)

Awareness is not only the binding element amongst simultaneous experiences, but also the binding element amongst diachronic experiences. Successive experiences which belong to a single subject are also presented to a

single awareness, and it is by virtue of this fact that the experiences are apparently unified over time.

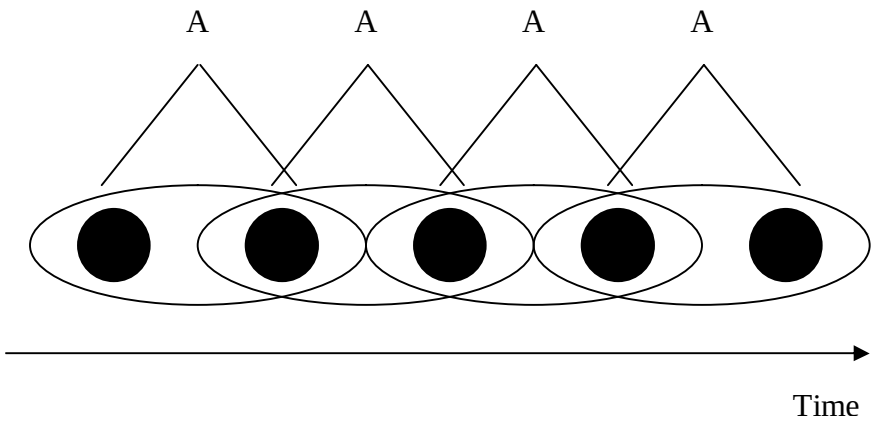

Diagram A

[Refer to Diagram A] The black circles represent experiences that belong to a single subject. Successive experiences are unified by acts of awareness (A), as represented by the lines. The overlapping oval shapes which encompass every two circles represent what some philosophers call *specious presents*. Specious presents are small durations of time in which all the experiences of a single subject are unified with each other. The length of each specious present however is difficult to determine, given how difficult it is to determine when an earlier experience stops being directly unified with its successor experiences.

Take for example the solfège which consists of “do”, “re”, “mi”, “fa”, “sol”, “la”, and “ti”. When sung at a normal pace, the first two notes are probably fully unified with each other—thus belonging to the same specious present. The first note however, is probably not directly unified with the last note. While reciting the tune to myself, I find the first note disappearing from the forefront of

my consciousness by the time “sol” comes up. By the time “ti” comes up, no trace of “do” remains except in my memory. Indeed, it seems *to me* that each specious present can only consist of two or less notes sung at normal pace. My personal perception is not authoritative however—the length of each specious present probably varies between individuals, and there may be those who can perceive the diachronic unity of the solfège in its entirety.

The first note is not entirely dissociated from the last note however: they still make up an entire tune together. The identity of the tune (for subjects like me who can only perceive two notes in one single specious present) is not given by a single unity, but by a number of overlapping unities within the tune itself. “Do” is directly unified with “re”, and although “do” is not directly unified with “me”, “re” is directly unified with “me”. Thus we can say that “do” is *indirectly* unified with “me”. The identity of the entire tune is thus given by overlapping specious presents, much like a chain made up of overlapping links. These overlapping specious presents define the identity of any one stream of consciousness: even if “do” is not directly unified with “ti”, they belong to the same stream of consciousness by virtue of being indirectly unified with each other.

The Simple Conception

Dainton also believes that there is just one relationship which holds amongst synchronic experiences and also amongst diachronic experiences. However, one significant difference between Dainton’s account and the

Awareness thesis is that Dainton's account lacks an awareness-content bifurcation. Dainton thinks that there is a kind of primitive relationship which holds between experiences, unifying them as in Diagram B.

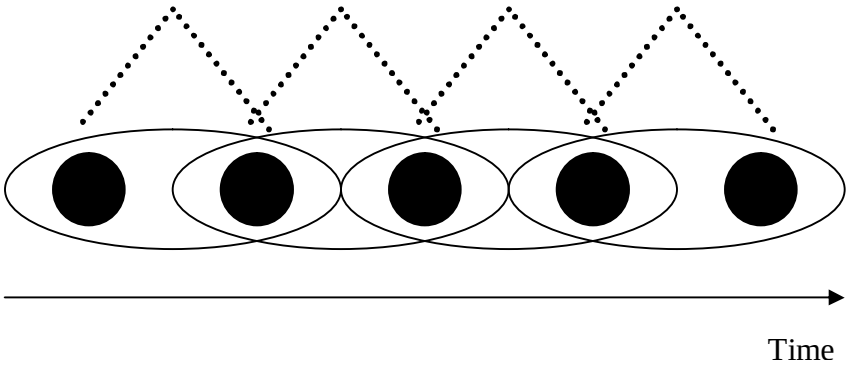

Diagram B

Again, we can make sense of the Simple Conception account with the idea of overlapping specious presents. However, this time there are no acts of awareness which impose the unity "from above". Dainton proposes that experiences themselves are "self-revealing". This self-revealing property enables them to be unified in a bottom-up manner. Experiences are thus intrinsically conscious, which means that they require no additional act of awareness in order to be conscious. By their very nature, experiences are revealed to the subject and unified with other simultaneous experiences and some non-simultaneous experiences. This natural and primitive relationship is what Dainton calls "co-consciousness".

This is not to say that we are always fully aware of all our experiences. We can be aware of our experiences to varying degrees, depending on the amount of attention we devote to different experiences. In saying that experiences are self-revealing, Dainton is suggesting that there is a minimal degree of awareness that we have of all our experiences. This kind of awareness, however, is not a separate act over and above the experiences like the acts of awareness propounded in the Awareness thesis. This awareness is somehow part of the intrinsic nature of experiences themselves. It is also largely passive, requiring little or no attention at all.

Following Dainton, we say that simultaneous experiences which are apparently unified in this way are *synchronically co-conscious*, and any non-simultaneous experiences which are apparently unified, or continuous with each other, are *diachronically co-conscious*. The unity of experience is an experience in its own right. That is to say, experiences which are related by co-consciousness constitute a further (more complex) experience.

> **Synchronic co-consciousness**: An experience X is synchronically co-conscious with another experience Y if there is an experience Z that has both X and Y as phenomenal parts.
>
> **Diachronic co-consciousness**: An experience X is diachronically co-conscious with an earlier or later experience Y if there is an experience Z that has both X and Y as phenomenal parts.

Diachronic unity of experiences, or more aptly, *continuity* or *connection* of experiences over time, refers to the *flow* of experience in a stream of

consciousness. As pointed out earlier, experiences are not completely isolated from the experiences before and after them. Every experience lasts a short while, and gets replaced seamlessly by some other experiences. Most of the time, you feel a continuous presence of experiences, with no obvious breaks in between them. This continuity of experience is what is termed as the *flow* of experience. In Dainton and Bayne's words,

> A typical stream of consciousness is not a succession of discrete experiential atoms, far from it. Each brief phase of a stream of consciousness is *experienced as* flowing into the next. Think of what it is like to suffer a prolonged toothache, or to hear an extended tone played on a flute, or to watch a balloon float slowly across the sky. Each phase of your experience merges seamlessly with the next, and the next—indeed, so seamless is the flow that the division of experiences of this kind into distinct phases is often entirely arbitrary. (Dainton and Bayne 2005)

Dainton believes that this continuity within successive experiences partly constitutes personal persistence over time. However, diachronic co-consciousness between experiences alone is insufficient for defining personal persistence over time. Diachronic co-consciousness probably holds only amongst experiences which are not separated by too great a temporal distance. Once we consider experiences which are separated by more than a few hours, it seems implausible to think that they can form an experiential unity. Take for example the experience you have upon waking up from bed this morning—it is not part of your current experience. Yet surely you are the same self who woke up this morning.

For personal persistence, something weaker than *direct* diachronic co-consciousness is needed. We say that two experiences are *directly diachronically co-conscious* (or directly co-conscious for short) when they form an experiential unity. When two successive experiences form an experiential unity, we can perceive the later experience as immediately continuous with the earlier experience. As mentioned previously, our experience of waking up in the morning does not form an experiential unity with your current experience. However, even if the experiences in the morning are not directly co-conscious with your current experiences, they are directly co-conscious with some immediately following experiences, which are in turn directly co-conscious with other immediately following experiences, and it goes on, forming an unbroken chain of directly co-conscious experiences which has your current experiences at its end. We can then say that even though the morning experiences are not directly co-conscious with your current experiences, the morning experiences are *indirectly* diachronically co-conscious (or indirectly co-conscious for short) with them.

For A's experiences to be *phenomenally continuous* with B's experiences just is for A's experiences to be directly or indirectly co-conscious with B's experiences. Dainton writes in the *Stream of Consciousness*:

> … it is plain that although only brief and adjoining phases of a stream are co-conscious, co-consciousness is also responsible for the unity of a stream as a whole. Co-streamal experiences separated by more than the duration of the specious present are not directly co-conscious, but they are co-conscious with an intervening succession of overlapping specious

> presents, which themselves are linked by co-consciousness… (Dainton 2006 pp. 166-167)

For convenience, we can also say that self A is phenomenally continuous with self B if and only if A's experiences are phenomenally continuous with B's experiences.

> **Phenomenal continuity**: Self A is phenomenally continuous with self B if and only if A's experiences are either directly or indirectly diachronically co-conscious with B's experiences.

Phenomenal continuity alone is not sufficient for personal persistence over a subject's *entire lifetime*. Throughout a subject's waking hours, her non-simultaneous experiences are all phenomenally continuous with each other. However, when she goes to sleep or falls into a coma, it is likely that she ceases to have any experiences. Recall the times when you wake up in the morning feeling as though you have only slept minutes despite a whole night's sleep. It is natural to think that during such nights there are periods when you have no experiences at all. Yet surely you are the same self as the night before. Dainton calls this the "bridging problem"; his account needs to explain how selves can persist over periods of experience-free states, given that personal persistence is defined in terms of phenomenal continuity.[9]

[9] See Dainton and Bayne 2005 for a more comprehensive discussion of the bridging problem, and their solution to it.

To account for personal persistence across such experience-free periods—call them periods of "deep sleep"—Dainton proposes that personal persistence is possible as long as the potential for experience remains, even if the subject is currently not having any experiences. We can call such potentials *experiential powers*. Experiential powers are fields of potential which are capable of producing experiences. A functioning brain is one example of a system which has experiential powers. During deep sleep, a self continues to possess experiential powers—if she had been awake, she would have produced experiences. And if she continues to possess the same experiential powers when she wakes up, she is the same self before and after deep sleep.

Hence, an earlier self is the same as a later self if and only if they share the same experiential powers. According to Dainton, an earlier self shares the same experiential powers with a later self if and only if their experiential powers, if active, would have produced experiences which are diachronically co-conscious with each other. Thus an earlier self is the same as a later self if and only if their experiential powers, if active, would have produced experiences which are diachronically co-conscious with each other. In short, for a self who is awake, all of her experiences are phenomenally continuous with each other, and when she is asleep, her experiences *would have been* phenomenally continuous with each other if her experiential powers were active.

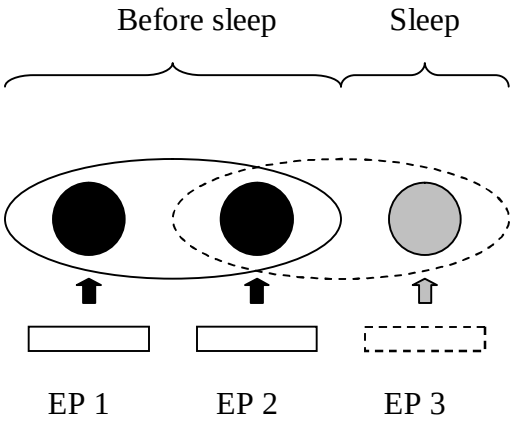

Diagram C1

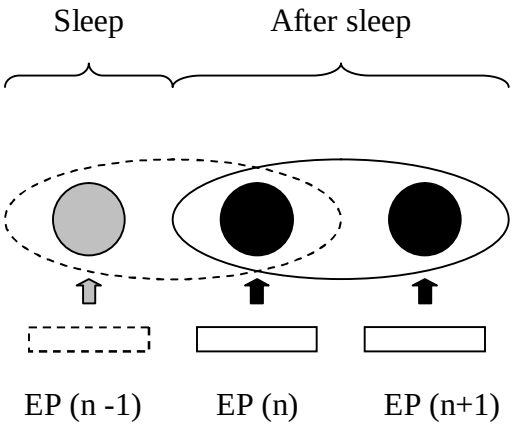

Diagram C2

Diagram C1 and C2 illustrate how a self persists over deep sleep. In Diagram C1, before the self goes into deep sleep, her successive experiences are diachronically co-conscious with each other. When she goes into deep sleep, her pre-sleep experiences are no longer diachronically co-conscious with any of her current experiences for the simple reason that she is no longer having any experiences. However, the pre-sleep experiences *would have been co-conscious*

with some experiences *if* her experiential powers were active (and hence producing experiences). In other words, she would have a continuous stream of consciousness if she were not asleep.

(Refer to Diagram C2) When the self wakes up, her post-sleep experiences are not diachronically co-conscious with any immediately preceding experiences, but they *would have been co-conscious* with some preceding experiences *if* her experiential powers were active at that time. Thus according to Dainton, an earlier self is the same as a later self if and only if the earlier self has experiences which *are* or *would have been* phenomenally continuous with the later self's experiences

At first sight, personal persistence seems to be defined in a disjunctive manner in the Simple Conception account: a self persists over time if and only if her experiences are (1) phenomenally continuous with some later experiences, *or* (2) would have been phenomenally continuous with some later experiences if her experiential powers were active. However, we can simplify the definition since the two disjuncts of the definition are supposed to have co-extensive results when the subject is awake. When the subject is awake, it is both true that her successive experiences are all phenomenally continuous with each other *and* that her successive experiences *would have been* phenomenally continuous with each other if her experiential powers were active. Only when the subject is in deep sleep, the first disjunct is not being fulfilled. At such times, the second disjunct does the bulk of the work in accounting for personal persistence.

Even so, we can treat the situation of deep sleep as the same as when the subject is awake, since the subject is supposed to have persisted through time if

she would have phenomenally continuous experiences *if her experiential powers were active*. It would simplify matters greatly then to just frame the discussion here in terms of a subject who is conscious throughout. The results would apply equally to a subject who has intermittent states of unconsciousness.

It is not my aim in this paper to argue for Dainton's account of personal persistence. However, it will be useful to see what motivates such an account, before we start prying it apart.

Motivating Dainton's Account

In "Consciousness as a guide to Personal Persistence", Tim Bayne and Barry Dainton argue that phenomenal continuity is essential for personal survival. They discuss a puzzle case developed by Bernard Williams.[10] I simplify the scenarios of the puzzle as follows[11]:

1. You are a subversive who has just been apprehended by the authorities. The authorities want to torture you in order to extract some crucial information. To avoid leaving incriminating torture marks on you, they will relocate you to another body, on which the torture will be carried out. Thanks to advances in neuro-technology, your brain need not be transferred in order for you to change bodies: instead, all of your psychological states (including personality, memories, beliefs and intentions, etc.),

[10] Williams 1970. See also Williams 1957 for an argument for the bodily continuity account.
[11] Dainton and Bayne 2006

will be copied from your brain to the new one. After the transfer of psychological states, you wake up in a new body.

2. You are a subversive who is about to be apprehended by the authorities. You know that if you are apprehended, you will be tortured, and crucial information about your group will be compromised. Your fellow subversives, fearing that you might divulge these crucial information, decided to put you through a procedure that will input in you a whole new set of psychological states (including personality, memories, beliefs and intentions etc.) taken from someone who has no knowledge of your group's dealings. You are not overjoyed at the prospect of undergoing such a procedure however: having a new set of psychological states will not prevent you from feeling the torture inflicted on your body. At most, you will not remember that you were a subversive while being tortured. The degree of pain will surely be the same.

Dainton and Bayne agree with Williams that in the first scenario, our intuitions are pulled in the direction of psychological continuity—you survive as the self who is psychologically continuous with you. They also agree that in the second scenario, our intuitions are pulled in the direction of bodily continuity—you survive as the self who is bodily continuous with you. However, both scenarios are supposed to be two different descriptions of the *same situation*—it

seems then that we have contradictory intuitions about a single situation at the same time.

Bernard Williams goes on to argue that only the second intuition—that of bodily continuity—is the correct one. Dainton and Bayne however think that this puzzle case shows that the two mainstream accounts of personal persistence—the psychological continuity account and the bodily continuity account—are both inadequate in explaining our deepest intuitions about personal persistence. They argue that the intuitions in the Williams' puzzle case are contradictory mainly because we are in the dark as to whether phenomenal continuity is preserved. If, however, we know the direction of phenomenal continuity—which self you are phenomenally continuous with—we would be in no doubt about which self you survive as. Dainton and Bayne argue that when phenomenal continuity diverges from psychological continuity, personal identity goes with the former. Similarly, when phenomenal continuity diverges from bodily continuity, personal identity goes with the former as well.

A simple thought experiment can show that personal identity goes with phenomenal continuity instead of psychological continuity. Imagine Jane is in the living room watching her favorite television show when she suddenly suffers from a stroke. As it turns out, the stroke is so severe that the parts of the brain responsible for her memories, beliefs, desires, and character are all utterly destroyed. The parts of the brain responsible for producing experiences, however,

are miraculously left intact.[12] Let us suppose that Jane does not notice herself having the stroke. She continues to have experiences that are unified from one moment to the next, even while her psychological states are changed drastically.

It seems that Jane would survive the stroke, even while most of her psychological states (excluding her phenomenal states) are changed. If she continues to have experiences that are unified from moment to moment, how can it possibly be denied that she survives the stroke? This conclusion is compelling if we consider the fact that at any given time, practically all of our psychological states are dormant and have no bearing on the phenomenal character of our experience at that time. This is especially true when we are not engaged in a cognitively demanding activity. If so, there could be no difference to Jane's experiences despite the sudden disappearance of her psychological states (most of which are lying dormant). If there is no difference to Jane's experiences, then it seems that she survives the stroke.

Another thought experiment can be used to show that personal identity goes with phenomenal continuity instead of bodily continuity. Suppose that Jim is due to use the teleportation machine to travel to Mars. The teleportation machine will blast his body into atoms, analyze the basic constitution of his body, and send the data to Mars where a twin machine will use an entirely new set of atoms to re-create Jim's body according to the original constitution. There is obviously no bodily continuity in this case.

[12] For the sake of argument, let us suppose that the parts of the brain that are responsible for producing experiences are independent of the parts of the brain responsible for memories, beliefs, desires and character.

Let us call the original Jim, Jim A, and the Jim on Mars, Jim B. Suppose that Jim A's experiences right before the teleportation are unified with the experiences of Jim B right after the teleportation. That is to say, Jim A's experiences are continuous with Jim B's. It seems intuitive that Jim survives the teleportation process, despite having no bodily continuity with the original body. Notice that we are able to pass this judgment even though we have no information regarding the psychological states. This means that we judged that Jim survives the process simply because phenomenal continuity is preserved. In other words, phenomenal continuity determines personal persistence.

Dainton and Bayne argue that when the three forms of continuity—psychological continuity, bodily continuity, and phenomenal continuity—come apart as they do in the thought experiments, we have the intuition that we survive as the being which is *phenomenally continuous* with the original self. They think that in considering our future, we want our experiences to continue more than we want our psychological states to continue. That is to say, given a choice, most people would prefer to have their experiences continue to flow into some later experiences, instead of having their psychological states being causally related to some later psychological states (again, assuming that the phenomenal states and psychological states are independent). And this seems to have some intuitive pull: if my phenomenal consciousness continues into the future, how can it be denied that I survive? On the other hand, if my psychological states continue to be causally related to some later psychological states, but my phenomenal consciousness ceases permanently, it seems highly doubtful that I survive at all.

To some people, this conclusion seems question begging: the self sustaining the phenomenal stream of consciousness will naturally think that it is the original self, but that does not mean that it *is* the original self. In fact, the original body with the original set of psychological states would *also* believe that it is the original self. If we privilege one self's belief over the other, then we are already assuming that personal identity goes with phenomenal continuity.

However, Dainton and Bayne are not arguing that personal persistence is based on the belief of the self sustaining the phenomenal stream of consciousness. In fact, the self sustaining the original phenomenal stream of consciousness could believe that she is a different self from the original self, since she has a different set of beliefs from the original self! Despite all these, it seems that our intuitions still tell us that the identity of the original self goes with the phenomenal stream of consciousness. If our intuitions are a good gauge of personal persistence, then personal persistence must be defined in terms of phenomenal continuity.

Overview

There is something to be said for Dainton and Bayne's account of phenomenal continuity. At the very least, it seems to capture some of the intuitions about personal persistence, especially from the first person's point of view. Understanding what motivates this account will aid us in understanding some issues that are being tackled later on in this paper.

Chapter 3

The Various Ways Selves Might be Thought to Undergo Fission

If selves are streams of consciousness as Dainton suggests, then two streams of consciousness constitute a single self if and only if the earlier stream is phenomenally continuous with the later stream of consciousness. For a stream of consciousness to undergo fission just is for the stream to be phenomenally continuous with two separate and distinct streams of consciousness at the same time.

To understand the various ways selves can undergo fission, we can start with envisioning the following thought experiment (developed by Parfit and modified for my purpose). A self X undergoes surgery to have half his brain removed. During the surgery, he experiences the transition from pre-surgery to post-surgery; or in other words, he feels himself surviving the surgery while it is being done (we are supposing that the man is conscious throughout the surgery).[13] According to Dainton's account, the post-surgery self should qualify as the same self as the pre-surgery self X since his experiences are phenomenally continuous with self X's experiences.

At the same time, however, the half of the brain that was removed is being transplanted into another body. This half of the brain in the new body also has the experience of the transition from pre-surgery to post-surgery (again we are supposing the brain-half remains conscious as it is being transplanted). This self

[13] Or if the man is unconscious during the surgery, it is still true that he would experience the transition from pre-surgery to post-surgery *if he were conscious*.

with the second body should similarly qualify as the same self as the original self X according to Dainton's account. It would not make a difference if both halves of the brain were to be unconscious throughout the surgery. Recall that under Dainton's account, an earlier self is the same as a later self if and only if the experiences of the earlier self would have been phenomenally continuous with the later self if their experiential powers were to be active. Thus cashing out the thought experiment in terms of a conscious brain merely simplifies, and does not change, the argument.

Does the original self survive the surgery? There are three possible answers with regards to this question: 1. the self does not survive; 2. the self survives as only one of the post-surgery selves; 3. the self survives as both post-surgery selves.

Dainton thinks that option 3 is the correct option. It is useful to see how he might argue for this option. A possible line of argument is as follows: it is unreasonable to believe in Option 1. Subjects are known to survive surgeries in which half their brains are removed.[14] If the self X actually experienced the transition from pre-surgery to post-surgery, and is able to detail what he felt when he went under the knife, then it is inconceivable that he did not survive. Option 2 is similarly unreasonable: if we think that selves can survive with half of their brains, then it will be arbitrary to claim that the original self survives as only one of the post-surgery selves. This is especially so if the two selves are each able to

[14] This procedure is known as hemispherectomy. Doctors remove half of the patient's brain, usually to treat severe cases of epilepsy or cancer in the brain. Studies on some of these post-surgery patients suggest that these individuals are the same selves before and after the surgery. See "http://www.ncbi.nlm.nih.gov/pubmed/15009226" for a report on the effects of hemispherectomy.

report the experienced transition from pre-surgery to post-surgery. Thus the original self must have survived as both selves, given that only option 3 is left.

There may be a fourth option, however. Someone could argue that there must be two selves in the first place: the body houses two selves, and each self is sustained by a different half of the brain. When the brain is split into two separate halves, each half continues to sustain one self each. This is not a case of fission, however, but of two closely related selves each surviving in an ordinary, non-fissile way. Taking up this option means that we are committed to the strange proposition that some humans have two selves in a single body. This option multiplies the number of selves beyond what commonsense tells us. If all things are equal, we ought to prefer an option which is ontologically more economical than option 4. Option 4 is hence best reserved as a last option.

Dainton chooses option 3, understood to mean that the original self undergoes fission to become two selves, and argues extensively in his book *The Phenomenal Self* for a way to accommodate fission.[15] My goal is to argue that Dainton cannot consistently do so; i.e. the possibility of fission is incompatible with Dainton's account, despite his claims to the contrary.

How a Single Stream of Consciousness Divides

Let us use the brain surgery thought experiment discussed above as our starting point. I will assume that the point of fission (if fission is possible) is the

[15] Dainton 2008

instant in which half of the brain is surgically detached from the other half, which is *before* it is actually transplanted into the new body. Thus I assume that fission, if possible at all, occurs in an instant.

Since the brain halves are assumed to be conscious throughout the surgeries, they will have experiences immediately preceding and immediately following the point of fission. Even if the brain halves are not actually conscious throughout the surgeries, they *would have* experiences that are phenomenally continuous throughout the surgeries *if their experiential powers were active*. This is stipulated in the previous section (refer to footnotes 12 and 13).

It is not unthinkable that the brain halves can have experiences immediately following the point of fission, before they are transplanted into a new body. Experiences are not restricted to merely sensory perceptions; there are also emotions, thoughts, mental images, etc. It does not seem absurd to think that many of these experiences can continue to exist even if the brain is not connected to any human body, as long as the brain continues to be sustained by the necessary nutrients.

Assuming that fission is possible, there are two things that we can say with regards to the identity of the two post-fission selves. Firstly we might say that the two post-fission selves are *numerically identical to each other*. The two resulting beings are one single self in two bodies. This, I will argue, is not a coherent option: if the two beings are really one single self in two bodies, then there is no fission of identity. Secondly we might say that the two post-fission selves are *not numerically identical to each other*. This essentially amounts to two selves

sharing a common part of their lives, namely the part before the point of fission. I will discuss these two options in turn.

Numerically Identical Post-fission Selves

To imagine a self surviving as two selves numerically identical to each other is to imagine a self with a divided mind. After the brain transplant surgery, the self simply finds himself looking through two sets of eyes, even though the two bodies are not physically connected to each other. What this amounts to is nothing more than a self who has grown an extra set of hands, legs, head… in fact a complete body. While it might prove disorienting at first for the self (how does one control four arms at the same time!), it is not unthinkable that he will get used to it eventually. Just imagine the case of a handicapped man who regains his walking ability after ten years of being wheelchair bound; he is sure to encounter some difficulty at first in controlling his newly recovered legs, but it is nothing that he cannot get used to given sufficient physiotherapy.

However, given the description, there seems to be just one center of consciousness and just one center of control for all the limbs. Surely we would not think that you have become two selves if you grow an extra set of arms. This is true even if you grow an extra set of every other body part as well, including a new head. If one day you should wake up finding yourself looking through two sets of eyes, and controlling two separate bodies, you might feel disoriented and

wonder which body you really reside within (if that question even make sense to you!), but surely you do not doubt that you are still a single self.

A stream of consciousness is defined as a set of experiences in which all its members are either directly or indirectly co-conscious with each other. A being with an extra head but with his every experience within each head co-conscious with the experiences in the other head seems to possess just a single stream of consciousness. If so, then no fission of identity took place: the original stream of consciousness simply flows on as before, as a single stream, albeit with altered character after the surgery: now it is constituted of two interconnected spheres of experience each in a different physical space (the body). A man with two heads may be able to perform mathematical calculations better than the average human due to the extra boost in processing power, but that does not make him two selves.

In conclusion, it seems that there is only one self before and after the brain transplant surgery if there remains just one center of consciousness, i.e. all the experiences in one body are co-conscious with the experiences in the other body. Therefore if the two resulting post-surgery selves are numerically identical with each other, then fission has not taken place.

Numerically Distinct Post-fission Selves

If the above is correct, then it cannot be coherently claimed that the two post-fission selves are numerically identical. To do so is to make the two resulting streams of consciousness essentially just one stream of consciousness, contrary to

the idea of fission. Therefore the best (and only) construal of fission is to claim that the two resulting selves are numerically distinct.

At first sight, this seems to be impossible: if a stream of consciousness A survives as two later streams of consciousness B and C, and if we take survival to mean numerical identity between the earlier and later streams, it is natural to think that the two post-fission streams of consciousness are numerically identical to each other as well. After all, numerical identity is transitive: if B is identical with A, and A is identical with C, then B is identical with C.

Perhaps the best way to construe this option is not to think that the earlier and later streams of consciousness are numerically identical, i.e. survival does not imply identity. When we say that the pre-fission stream survives as one of the post-fission streams, we are not saying that the pre-fission stream is exactly similar to the post-fission stream. We are saying that the pre-fission stream and the post-fission stream together constitute a single stream of consciousness. This is analogous to how the handle of a cup and the rest of the cup together constitute a whole cup. When we are pointing at the cup handle and saying that it is the same cup as when we are pointing at the cup body, we are not making a mistake. Similarly, when we are "pointing" at the pre-fission stream and saying that it is the same stream as the post-fission stream, we are not making a mistake. The pre-fission stream and post-fission stream together *make up* a single larger stream of consciousness.

It is obvious that we are not talking about numerical identity between the earlier and later parts of a single stream of consciousness: the parts are loosely

speaking identical only because they belong to the same stream of consciousness. To prevent confusion, we should avoid the use of the term *numerical identity*. We can simply say that a self survives as a later self if the pre-fission stream and the post-fission stream together constitute a single stream of consciousness. Given this manner of construal, there is no problem with thinking that a self can survive as two selves which are numerically distinct from each other, since the earlier self is *not* numerically identical with any of the later selves.

This brings us to the standard manner of construing how a self can survive fission as two other selves at the same time: the two post-fission selves are distinct but they share a common *temporal part* (or a group of *temporal slices*), namely the entire stream of consciousness before the time of fission. The idea of *temporal parts* comes from Four-Dimensionalism, a theory about identity and change over time.[16] According to Four-Dimensionalism, temporal parts are akin to spatial parts. Your right hand occupies a different part of space from your left leg, but they are all part of you—they are your spatial parts. We say that objects have spatial parts when they are extended in space. According to Four-Dimensionalism, objects are extended in time too. For example, you-yesterday is a different temporal part from you-today, but both you-yesterday and you-today are parts of you—they are your temporal parts. This also means that you are never wholly present at any one point of time: at any one instant, only a temporal slice of you is present. The whole-you is made up of all the temporal parts you have

[16] See David Lewis 1986 and Theodore Sider 2001 for some examples of Four-Dimensionalism. See also Rea 1998 for an argument against Four-Dimensionalism.

over a lifetime. You are a four-dimensional object that is extended through time much in the same way as how you are extended in space.

Objects can share spatial parts; for example, two adjoining rooms can share the same wall. According to Four-Dimensionalism, selves as four-dimensional objects can share temporal parts in the same way. If fission is possible, then two selves can share an entire stretch of temporal parts before the point of fission.

The idea of selves as four-dimensional objects complements the idea of selves as streams of consciousness. Suppose we call the complete set of synchronic experiences of a self at a time as a *total synchronic experience*, then a total synchronic experience will correspond to a temporal slice of a self. Each temporal slice is connected to its immediately preceding and following temporal slices by the relationship of co-consciousness. It is this relationship of co-consciousness that makes the set of temporal slices more than just a loose collection of individual parts—together, they constitute a single stream of consciousness.

This manner of construal allows us to conceive and speak of two distinct selves being one self in the past, simply by sharing a common part of their lives. "Sharing" in this sense is atemporal: two selves can share a common part of their lives as long as they have a common temporal part in the past, are having it now, or will be having it in the future. With this way of conceptualizing sharing, we can now say that the fission twins are the same self before a certain time by sharing a common temporal part.

What fission is not

Fission only happens when there is one original self who splits into two selves existing at the same time. A procedure in which two distinct, but physically connected, selves are separated from each other is not considered fission. For example, a surgery that physically separates a pair of Siamese twins intuitively does not count as fission.

Further suppose that our left brain and right brain each houses one self, and that these two selves have always acted in such perfect unison that no one, including themselves, suspects that there are two selves all along. When half of the brain is being transplanted into a new body, all that is achieved is one of the two selves being relocated to a new body. At the point of surgery, these two selves merely come apart spatially; there is no personal fission at all since there are two separate streams of consciousness all along. Think of two river streams which flow side by side, but without actually merging at all; when one stream veers off into another direction, it is merely a separation of a trivial sort, and not one stream becoming two.

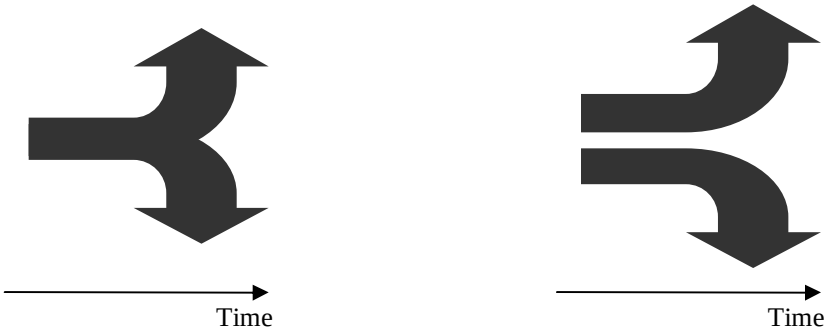

Diagram D

Such non-fissile cases are akin to how Siamese twins are separated by surgery—while there is separation of the flesh, there is no separation of identity since the two post-surgery selves were not identical to begin with. Since there were two selves all along, such cases cannot be considered as fission. This is different from the case where just one stream of consciousness divides into two separate streams at the same time. The difference is illustrated by diagram D; the figure on the left (representing fission) shows two streams of consciousness which share a common part before a certain time. Before the time of fission, the two streams are not distinct from each other. On the other hand, the figure on the right shows separation of the kind where two distinct and separate streams existed all along. This is not what we would normally term as fission.

Review

Thus far, I have discussed two different ways of construing fission. The first way is to construe the post-fission selves as numerically identical with each other. I have shown that this option is incoherent. The second way is to construe the post-fission selves as numerically distinct from each other. I argued that only the second way is coherent, and provided us with a way of talking about fission using the idea of *temporal parts*. At the same time, personal fission is distinguished from mere physical separation.

Chapter 4

Why Dainton's account is Incompatible with the Possibility of Fission

In this chapter, I will discuss two features of Dainton's Simple Conception account that are apparently incompatible with the possibility of fission. The first feature is a version of experiential (or phenomenal) holism, which may seem implausibly strong at first sight. There are two reasons to think that this version of experiential holism is incompatible with the possibility of fission; I will discuss the two reasons in turn. Towards the end of the first two sections however, I will suggest that the incompatibility of phenomenal holism with fission is only an apparent one. The second feature is Dainton's account of co-consciousness. Here, I will argue that given how Dainton characterizes co-consciousness, it is impossible for subjects to undergo fission.

Holism and its Implications

Experiences can be simple, or complex. The distinction between simple experiences and complex experiences may be arbitrary to some extent. Even a simple experience of reading a book may be further distinguished into finer experiences of perceiving shapes and color. It seems that a condition for a simple experience to be part of a complex experience is that the simple experience must be co-conscious with the other simple experiences which make up the complex

experience. Let us call the set of experiences in which every element is directly co-conscious with each other a *total experience*. A total experience is an experience in its own right, albeit a complex one.

According to the Simple Conception account, co-consciousness is a relationship which affects the intrinsic character of the experiences involved. Thus a total experience is holistic in this manner. To say that a given set of experiences is holistic is to say that the integral experiences are intrinsically dependent for their phenomenal character on other experiences in the same set.

To illustrate how a given set of experiences can be holistic, we can do some basic phenomenological exercises on the experience of reading a book. To say that the experience of reading a book is part of a set of holistic experiences is to say that the intrinsic phenomenal character of this experience is affected by the other experiences in the set. The experience of reading a book is probably very different if I am reading in a boiler room instead of being in an air-conditioned room. I may not be as focused or patient when I am reading in the boiler room, and that surely have some phenomenological effects on my experience of reading. And without a doubt, I will not consider the experience of reading in the boiler room as enjoyable, in contrast to reading in an air-conditioned room. It seems that to some degree, the phenomenal character of experiences can be affected by the other experiences that a subject has at the same time.

If a set of experiences is holistic, then the integral experiences are affected in such a way that they cannot occur except in the presence of the same, or similar, accompanying experiences.

Holism: Experiences are made up of simpler experiences whose intrinsic phenomenal character reflects the character of the whole in such a way that the simpler experiences cannot occur except in the same whole, or a similar one.

According to holism, experiences are irrevocably "colored" by the stream of consciousness they are in, in such a way that they could not possibly occur in another dissimilar stream of consciousness or on their own. If the intrinsic phenomenal character of experiences is dependent on the streams of consciousness they occur in, then their existence are by extension dependent on the existence of the streams of consciousness; they are hence un-detachable from the wholes they exist in. This is not to say that a stream of consciousness cannot be logically distinguished into different parts. We can still distinguish the experience of eating an ice-cream from the experience of sun-tanning on the beach, even if they both occur in the same stream of consciousness, but we also think that neither could have occurred in another stream of consciousness.

Non-holism on the other hand likens experiences in a stream of consciousness to sticks in a bundle; even though the sticks are bundled together, they can be taken apart and re-bundled into a different set. According to non-holism, experiences which belong to a single stream of consciousness can exist in a different stream of consciousness or on their own without any change in their intrinsic character. The identity of the experiences is not affected in any way by

the wholes the experiences exist in. In other words, experiences are not dependent on their streams of consciousness for their existence.

Do we have any reasons to believe that our experiences are holistic? There is some evidence that suggests so. Psychologists who belong to the Gestalt school propose that there are certain degrees of phenomenological interdependence amongst our experiences.

Diagram E Müller-Lyer illusion[17]

In the Müller-Lyer illusion (Diagram E), we perceive the center line of the left figure to be longer than the center line of the right figure, even though both lines are actually of the same length. The orientation of the fins clearly affects our perception of the length of the center line. In this case, the Y-shape figure makes its center line seems longer than it actually is, while the pointy-shape figure makes its center line seems shorter than it actually is. Since there are objective ways of measuring the lines, like using a ruler, it cannot be denied that our perception is skewed in some ways by the presence of the fins. D.W. Hamlyn notes that "(it) is the total context that is relevant, not just the lines themselves, and we may account for the illusion by reference to this total context." This is but

[17] The two Gestalt figures in this section are taken from Nevid 2003 pp. 126.

one example of phenomenal holism that the Gestalt psychologists allude to. Another figure with the same principle is the Ponzo illusion (Diagram F).

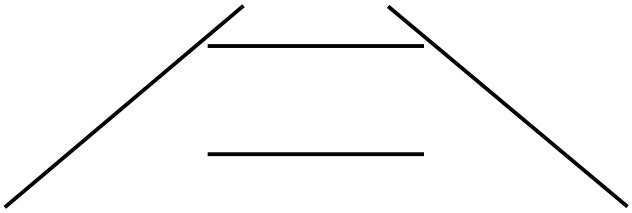

Diagram F Ponzo illusion

In the Ponzo illusion, the upper horizontal line seems longer than the lower horizontal line, even though they are actually of the same length. The converging lines at the side may have created the impression that the upper horizontal line is further away (into the page) and hence longer than the lower line which is perceived as closer to us.

Illusions like the Müller-Lyer and Ponzo serve to illustrate the point that our experiences are holistic in nature—phenomenal interdependencies exist between the different elements of a single complex experience. Steven Lehar puts it thus in his book on Gestalt psychology: "…(there) must be some kind of global process at work in visual recognition, which operates on the image as a whole, rather than in a piecewise manner building up from local features."

The Gestalt psychologists do not think that such examples are merely exceptions within our sensory perceptions which crop up from time to time. Rather, they are indications of a phenomenon which is present ubiquitously in our experiences. Our everyday experiences may seem free of such phenomenal interdependencies, but it is only because the perceptual illusions are so natural

that we simply do not notice them. It takes a very clear example like the Müller-Lyer to point out such interdependencies to us. Take for example the corner of a room when viewed from inside of the room: the corner may seem clearly of a certain height, but it may have appeared longer than it actually is since the adjoining walls are diverging towards us, just like the figure in the left side of the Müller-Lyer illusion.

While a few examples like the two figures shown here may not prove that phenomenal holism is widespread in our sensory perceptions, they do go some way towards suggesting that our experiences are holistic in nature. What implications do the findings of the Gestalt school have for Dainton's Simple Conception account? That depends largely on how serious we take the findings to be. If we take the Gestalt effect to be minimal and that it fails to apply to most of our experiences, then we might think that the implications are similarly minimal as well. If on the other hand, we take the Gestalt effect to be indicative of a widespread phenomenon that is present ubiquitously in our experiences, then it may be that the implications are very far-reaching indeed. Dainton himself appears to embrace a similar version of holism.

In *Stream of Consciousness*, Dainton writes of a similar version of holism amongst three musical notes *Do-Re-Mi*,

> Suppose that Re had been followed by Fa rather than Mi. The global character of Re would reflect this fact: it would be of the form 'a Re-type experience preceded by a Do-type experience and *succeeded by a Fa-type experience*', as opposed to 'a Re-type experience preceded by a Do-type

> experience and *succeeded by a Mi-type experience*'. (Dainton 2006 p. 230) (My emphasis in italics)
>
> To this extent, the *identity* of an experience is sensitive to the characters of the *earlier* and/or *later* experiences with which it is co-conscious. (Dainton 2006 p.230) (My emphasis in italics)

By local character, Dainton is referring to the phenomenal qualities of an experience with respect to its specific modality. For example, the local character of a thunderclap is its auditory quality. The global character of a thunderclap, on the other hand, is not restricted to being auditory. The global character of a thunderclap is the quality of being co-conscious with an earlier flash of lightning if it is preceded by the perception of a flash of lightning. An auditory experience can have the global character of being co-conscious with a visual experience without affecting the local character. Try to imagine the difference in the experience of listening to Mozart in a concert hall and the experience of listening to the same piece when the air-conditioning breaks down: the auditory characters of both experiences are the same even though their global characters are different.

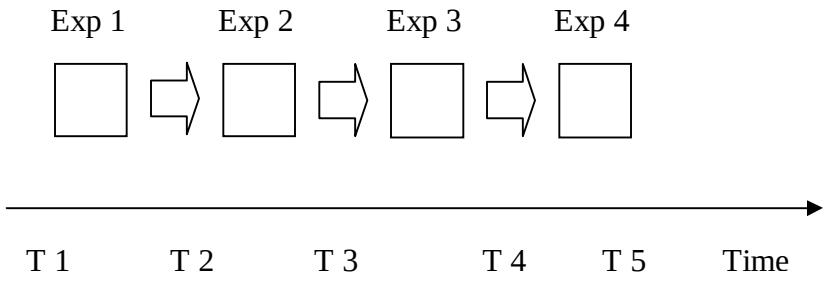

Diagram G

[Refer to Diagram G] To claim that experiences have global character is to claim that experiences are holistic. In diagram G, Exp 2 would have a different global character if Exp 3 had not existed, even though it would have the same local character. Given that the identity of experiences is defined by a combination of both local and global character, Exp 2 would have been replaced by a different experience if Exp 3 had not occurred. Thus if our experiences are holistic over time, then Exp 2 could not have occurred except when followed by Exp 3 or experiences similar to Exp 3.

There seems to be some sort of backward causation at work given that Exp 3 occurs later in time and yet is able to affect Exp 2. Dainton himself is aware of this seeming absurdity. He only notes briefly, however, that "… like all mid-stream experiences, (Exp 2) is Janus-faced, being co-conscious with both earlier and later experiences. Once this is recognized, the situation no longer seems peculiar or problematic; it is simply an inevitable consequence of the fact that distinct total experiences overlap." (Dainton 2006 p.230)

Dainton's account is indeed highly questionable if it posits that our experiences regularly involve backward causation. However, we need not think that this kind of backward-looking phenomenal holism requires backward causation to work. In *Consciousness explained*, Daniel Dennett discusses a phenomenon present in our experiences called the *phi phenomenon* which appears to be an example of such a backward-looking phenomenal holism.[18] Dennett reported the findings of some psychologists as follows, "If two or more small spots separated by as much as 4 degrees of visual angle are briefly lit in rapid

[18] See Dennett 1991.

succession, a single spot will seem to move back and forth." (Dennett 1991, p. 114) It was further discovered that if the two spots are of different colors, the first spot will seem to move towards the second spot, then change color suddenly in the middle of its passage towards the second spot.

The psychologists were puzzled by the color change in the *phi phenomenon* (call it the *color phi phenomenon*): how does the moving spot know what color to change to if the subject has yet to experience the second (stationary) spot? There is no doubt that the color of the second spot plays a part in determining what color the moving spot will change to, but barring precognition, it must seem that some kind of backward causation is at work.

There are, however, other explanations that are less extravagant than either precognition or backward causation. Dennett discusses two possible explanations, one which he calls the *Orwellian* hypothesis and the other the *Stalinesque* hypothesis.

Let us suppose that the first spot is red in color, and the second spot green. In the Orwellian hypothesis, we first experience the red spot then the green spot *then* we experience a revision in memory which consists of a false memory of a red spot moving and changing to green mid-way. So in reality, we never did experience a red spot moving and changing color mid-way. What we do experience are merely the two stationary spots plus the (false) memory of having seen a moving red-turning-to-green spot. And according to the Orwellian hypothesis, this revision in memory happens very quickly—so fast that before you can form a verbal report of the two stationary spots, your memory is already

contaminated. Naturally, since your memory is already contaminated, your very first verbal report of seeing the two spots is contaminated—you report, falsely, that you have seen first the red spot, then the moving spot which changed color, then the green spot.

In the Stalinesque hypothesis, there is a time delay to all experiences that we have. The brain first receives the information of the red spot and the green spot, but before the information becomes conscious, the brain splices some newly created experiential frames in—the experience of a moving red spot changing into green midway. This is much like how the editing rooms of "live" broadcast screen their programs: the images from a game is transmitted to the editing room, where editors, working as fast as they can, censor any obscenities and splice in advertisements. The edited game is then broadcast over the television network with only a slight delay in time. In the brain, the images of a moving red-turning-into-green spot are spliced in between the image of the red spot and the image of the green spot before all the images are made conscious. The subject then reports, truly, that he experiences first the stationary red spot, then the moving red-turning-into-green spot, and lastly the stationary green spot.

The main difference between the Orwellian hypothesis and the Stalinesque hypothesis is that in the latter, the subject is right about his experiences: he really did have the three experiences in the reported order. In the Orwellian hypothesis, the subject did *not* experience the moving red-turning-into-green spot, but he was led to believe that he did, purely due to the revisions to his memories.

It may seem that empirical findings would easily disprove one hypothesis in favor of the other, but surprisingly, both hypotheses have resisted being ruled out in this way.[19] My aim in this paper is not to argue for either of these hypotheses, but to show that backward-looking holism does not necessarily involve backward causation—there are more plausible explanations such as the Orwellian hypothesis or the Stalinesque hypothesis which can account for such phenomena. If so, then the seemingly strong holism that Dainton attributes to our experiences does not seem that absurd after all.

First reason to think that holism is incompatible with fission

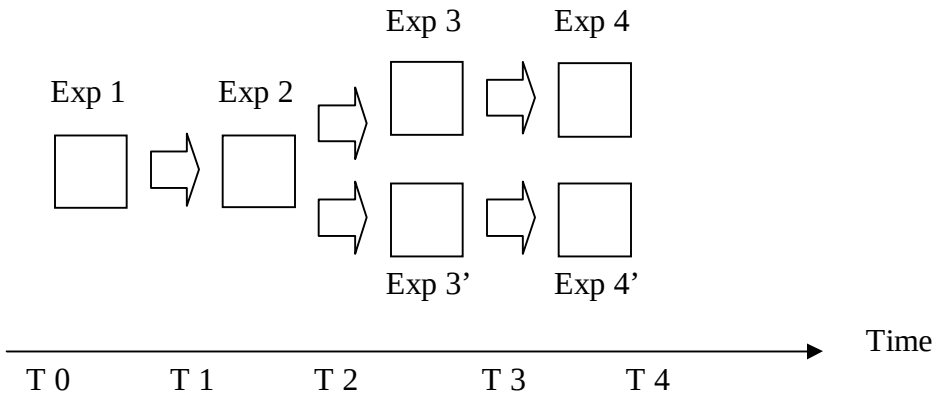

Diagram H

If all our experiences are holistic as described, then there seems to be two reasons to believe that fission cannot take place. We will talk about the first reason in this section. Refer to **diagram H**. At time T1 to T3, an experience Exp 2 supposedly flows into two separate and distinct experiences Exp 3 and 3'. If our experiences are holistic over time as Dainton describes, then the intrinsic

[19] For an in-depth discussion of the two hypotheses, see Dennett 1991 (pg. 101-138).

phenomenal character of Exp 2 will affect the intrinsic character of both Exp 3 and 3'.

At the same time however, the intrinsic phenomenal character of Exp 2 is also affected by the intrinsic phenomenal character of Exp 3. If the intrinsic character of Exp 2 is affected by the intrinsic character of Exp 3, then the intrinsic character of Exp 3' must also be affected by the intrinsic character of Exp 3, since Exp 2 affects Exp 3'. Similarly, Exp 3 must be affected in the same way by Exp 3'. Thus according to Dainton's version of phenomenal holism, Exp 3 could not have occurred except when occurring together with an experience similar to, or identical with, Exp 3'.

If our experiences are holistic in the manner that Dainton describes, then the first experience in either of the post-fission stream of consciousness cannot occur except as together with the first experience of the other post-fission stream of consciousness. However, if two selves are expected to emerge from the surgery, it does not seem plausible to think that their experiences are dependent on each other's experiences in such an intimate manner. In order for fission to have taken place, there should be two resulting streams of consciousness. If Exp 3 and Exp 3' are related in such a manner, however, it is not clear if there are one or two resulting streams of consciousness after all.

Moreover, if Exp 3 could not have occurred except when occurring together with Exp 3', and if Exp 3 and Exp 3' affect each other intrinsically, it seems that we have a good reason to think that they are directly co-conscious after all. If the two experiences are directly co-conscious with each other, then we have

just one post-procedural stream of consciousness—again, no fission would have taken place.

A second reason for the incompatibility of holism and fission

If our experiences are holistic as described, we will get some very paradoxical results if fission is possible. Suppose that before the fission procedure, the subject is exposed to a buzz of a certain volume, and Exp 2 is the experience as of hearing this buzz. If the fission procedure produces two new selves in the same environment, we can expect the phenomenal character of Exp 3 to be quite similar to the phenomenal character of Exp 3'. However, it is possible for one of the selves to be produced in a room in which there is a buzz lower in volume than the original buzz, while the other self is produced in another room where there is a buzz higher in volume than the original buzz. (Here, I will assume that the surgeries are instantaneous. Thus the brain removal and the brain transplant all happen within an instant. This is to allow the subject(s) involved to have sensory perceptions immediately following the supposed point of fission.)

Given Dainton's account, where earlier experiences and later experiences form holistic experiential wholes, the self at the point of fission seems to be in a paradoxical situation: she would have an experience as of hearing a buzz which increases *and* decreases in volume at the same time. From the perspective of the post-fission selves, there is not much of a problem: each of them merely experiences a buzz which became louder *or* softer, respectively. But *from the*

perspective of the pre-fission self, it is not possible that she has the experience of a buzz which appears to progressively increase and decrease in volume at the same time. Yet if Dainton is right, and Exp 2 is co-conscious with both Exp 3 and 3', then Exp 2, Exp 3 and Exp 3' will form a holistic unity. The pre-fission self *will* experience the volume of the buzz to be increasing *and* decreasing at the same time.

Or suppose that the pre-fission self experiences a pain of a certain degree in her left thigh. After the fission procedure, one of the resulting selves experiences a pain in her left thigh to a lower degree, while the other self experiences a pain in her left thigh to a higher degree. Again, the pre-fission self seems to be in a paradoxical situation: at the point of fission, she will experience a pain which is alleviating *and* intensifying at the same time.

We can put the same point in another way. From the perspective of one of the post-fission selves, all she has is an experience as of a pain which alleviates over time. This means that she is phenomenally continuous with a pre-fission self who has the experience as of a pain alleviating. For the other post-fission self, she has an experience as of a pain which intensifies over time, which means that she is phenomenally continuous with a pre-fission self who has the experience as of a pain intensifying. If so, then the two post-fission selves cannot have the same pre-fission self, for their pre-fission selves have contrary experiences. This means that two selves existed all along before the procedure. If so, then the procedure cannot be fission.

The incompatibility is only apparent

Earlier on I mentioned that Dainton's version of phenomenal holism might appear to be absurdly strong since it seems to involve backward causation. I also suggested two hypotheses (developed by Dennett) to explain this kind of backward-looking holism without invoking backward causation and pre-cognition—the Stalinesque hypothesis and the Orwellian hypothesis. However, it turns out that if Dainton subscribes to either of the two hypotheses to explain the backward-looking holism in his account, then his version of phenomenal holism seems to be compatible with the possibility of fission after all.

First, the Orwellian hypothesis. Recall that the color change of the moving spot in the color phi phenomenon is explained by revisions of memory by the subject *after* she experienced the second stationary spot. That is to say, the subject first experiences the red spot then the green spot *then* she experiences a revision in memory which consists of a false memory of a red spot moving and changing to green mid-way. According to the Orwellian hypothesis, this means that at the point of surgery the self would not experience any backward looking unity between the last experience in the pre-surgery stream of consciousness and the first experience in the post-surgery stream of consciousness. It is only after she has experienced the first post-surgery experience that she revises her memory accordingly.

Now, if both transplant surgeries are successful, then even if each brain-half (each in a different body) has a different experience, there will be no

absurdity involved since the pre-surgery self does not have any contradictory experiences at the point of surgery. The pre-surgery self does not have, to borrow the discussion in the immediately preceding section, an experience as of a pain intensifying and alleviating at the same time at the point of surgery. At the point of surgery, the pre-surgery self has yet to experience the greater degree of pain that one of the post-surgery self will feel, nor the lesser degree of pain that the other post-surgery self will feel. It is only after the point of surgery, that the revisions in memory take place. Each post-surgery self will have a different memory of the surgery. One has the memory of her pain alleviating over time, while the other has the memory of her pain lessening over time. But neither the pre-surgery self nor the post-surgery selves have the contradictory experience of a pain alleviating and lessening at the same time.

In the Stalinesque hypothesis, there is a time delay to all experiences that we have. For the color phi phenomenon, the brain first receives the (physical and non-experiential) information of the red spot and the green spot, but before the information becomes conscious, the brain splices some newly created experiential frames in—the experience of a moving red spot changing into green midway. According to the Stalinesque hypothesis then, at the point of surgery, the self will receive sensory (physical but non-experiential) information of the surgery, but will not have any conscious experience of the surgery yet. It is only after the brain halves are successfully transplanted, and after the post-surgery selves has the first post-surgery experience, *then* the brain halves will splice in some newly created experiential frames in between the pre-surgery experience and the post-surgery

experience. And again, it seems that at no point of time will there be a self who has the contradictory experience as of a pain alleviating and lessening at the same time. This is because the newly created experiential frames of the surgery are only available to the post-surgery selves *after* a time delay from the surgery. One will have the experience as of her pain alleviating over time, while the other has the experience as of her pain lessening over time. Due to the time delay postulated in the Stalinesque hypothesis, the pre-surgery self would not have the experience as of undergoing surgery at the instant of surgery itself.

In general, any hypothesis that can explain backward-looking phenomenal holism, and which does not make use of backward causation or precognition, would render Dainton's version of phenomenal holism compatible with the possibility of fission. This is because if we bar backward causation or precognition, there is no way that the subject can experience, at the point of surgery, any holistic effects from the post-surgery experiences. The subject can experience those effects with a time delay (as in the Stalinesque hypothesis) after the surgery, or she does not experience any such holistic effects at all, but instead has her memory of the surgery revised (as in the Orwellian hypothesis). In any possible hypothesis explaining backward-looking phenomenal holism, the pre-surgery self will not have any contradictory experiences, while the post-surgery selves might have different, even contrary experiences. But this is entirely compatible with the possibility of fission. Thus, even though the phenomenal holism of Dainton's account is outwardly incompatible with the possibility of

fission, it turns out to be otherwise once we explain the mechanisms behind backward-looking holism.

The Nature of Co-consciousness

I will argue that there is still one feature of Dainton's account that is incompatible with the possibility of fission. If experiences are interrelated by the co-consciousness relationship as described by Dainton's account, then streams of consciousness would be unable to split up, because simultaneous experiences will always be unified if they are diachronically co-conscious with a single experience.

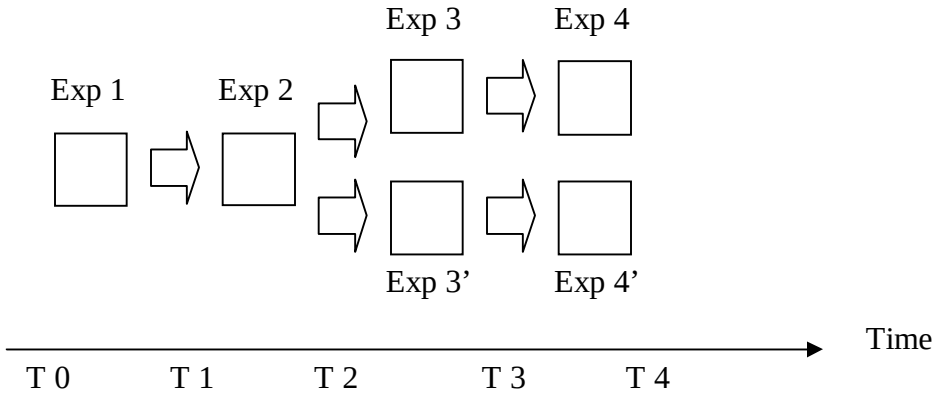

Diagram H

Let us look at what happens at the supposed point of fission again (**Diagram H**). A single experience Exp 2 is co-conscious with two other experiences Exp 3 and Exp 3'. In order for the procedure to count as fission, each of the two resulting streams of consciousness must constitute a distinct self. This means that the two resulting streams of consciousness *must not* be directly co-conscious with each other (presumably, the two streams of consciousness will

always be indirectly co-conscious with each other because they share a common past). This I have argued for in Chapter 3: the two resulting streams of consciousness cannot be directly co-conscious with each other, or they will risk becoming a single stream of consciousness.

If the two streams of consciousness cannot be directly co-conscious with each other, then Exp 3 and Exp 3' cannot be directly co-conscious with each other. However, given what we know of Dainton's account of co-consciousness, this does not seem possible. According to Dainton, experiences which are co-conscious with each other are "fused" together. Dainton describes the relationship of co-consciousness as follows:

> When an experience e1 is co-conscious with a simultaneous experience e2, these two experiences are in effect fused into a single unit of experience, each part of which is co-conscious with every other part… In a manner of speaking, the two are wholly joined, there is no 'distance' separating them at all. Since e1 and e2 are parts of a single experience in this way, how could it be possible for another experience e3 to be co-conscious with e2 without also being co-conscious with e1? Given that e1 and e2 are fused, any experience that is co-conscious with e2 will automatically and necessarily be co-conscious with e1 as well. (Dainton 2006 p. 105)

The language is a little metaphorical, but the implications are clear: when one experience is co-conscious with another experience, a third experience which is co-conscious with the first cannot fail to be co-conscious with the second. If that is so, then Exp 2 and Exp 3 together form a single experiential unit, and it is

not possible that this single experiential unit is co-conscious with Exp 3' without Exp 3 being directly co-conscious with Exp 3'. Thus Exp 3 cannot fail to be directly co-conscious with Exp 3'.

Dainton is talking about the relationship of co-consciousness between simultaneous experiences, and it seems that it should hold between diachronic experiences as well. However, it must be noted that there are some important differences between the synchronic case and the diachronic case. For three temporally successive experiences which are diachronically co-conscious with each other, the fact that the first experience is directly co-conscious with the second, and the second is directly co-conscious with the third, does not necessarily mean that the first is directly co-conscious with the third. In fact, if the first experience is separated from the third by the duration of a diachronic total experience, then the first experience will *not* be directly co-conscious with the third.

That is to say, in the normal diachronic case (referring to Diagram G), by the time Exp 3 occurs, Exp 1 would have been too far in the past for the two experiences to be directly co-conscious with each other. Thus it is no surprise that even though Exp 3 is directly co-conscious with Exp 2, and Exp 2 is directly co-conscious with Exp 1, nonetheless Exp 3 is not directly co-conscious with Exp 1.

It might seem that the difference between diachronic co-consciousness and synchronic co-consciousness is significant enough to deny that Exp 3 is directly co-conscious with Exp 3'. However, the case of normal diachronic experience we are asked to consider is importantly different from the case of fission. In the

normal diachronic case, the first experience needs to be separated from the third experience by at least a certain duration in order for them not to be directly co-conscious with each other. In the case of fission, we are asked imagine a scenario where Exp 2 is directly co-conscious with both Exp 3 and Exp 3', where Exp 3 and Exp 3' are *simultaneous*, and yet the two experiences are not directly co-conscious with each other. If Exp 3, Exp 2, and Exp 3' are lined up successively in that order, it is reasonable to think that Exp 3 and Exp 3' might not be directly co-conscious with each other. But imagination fails us when we are to suppose that two simultaneous experiences which are directly co-conscious with a single experience are not directly co-conscious with each other. If we think in terms of the metaphors that Dainton employs, the later parts of Exp 2 are fused into a single unit of experience with the earlier parts of Exp 3. At the same time, the *same parts* of Exp 2 are fused into a single unit of experience with the earlier parts of Exp 3'. Given that, it seems inconceivable how Exp 3 and Exp 3' can fail to be directly co-conscious with each other.

The upshot of this section is that Exp 3 and Exp 3' cannot fail to be directly co-conscious with each other given Dainton's account. Notice that this argument applies to all subsequent experiences later than Exp 3 and Exp 3'. If Exp 3 and Exp 3' are directly co-conscious with each other, as I have argued, then Exp 4 and Exp 4' cannot fail to be directly co-conscious with each other as well, because they are both directly co-conscious with a single experience (Exp 3 + 3'). Thus if the experiences at the point of fission cannot fail to be directly co-conscious with each other, then fission cannot take place.

Objection

Why couldn't Dainton, for example, deny that the later parts of Exp 2 are fused into a single unit of experience with the earlier parts of both Exp 3 and Exp 3'? Previously, I mentioned that Dainton is talking about the relationship of co-consciousness between simultaneous experiences when he said that "(when) an experience e1 is co-conscious with a simultaneous experience e2, these two experiences are in effect fused into a single unit of experience…" I then extrapolated the characterization of the synchronic co-consciousness relationship to the case of diachronic co-consciousness. Perhaps that is an invalid extrapolation. Could Dainton have intended the relationship of synchronic co-consciousness to be significantly different from the relationship of diachronic co-consciousness in this respect?

The problem with this objection is that Dainton explicitly avows that the diachronic co-consciousness relationship is the same as the synchronic co-consciousness relationship. Dainton writes of the diachronic co-consciousness relationship as follows:

> My aim is to establish that the diachronic unity of experience is no different, in essentials, from the synchronic: both are the product of co-consciousness. Just as simultaneous experiences… can be experienced together, so can successive experiences, experiences occurring at different (but not distant) times. (Dainton 2006, p. 113)

Beyond that, he makes no attempt to characterize the diachronic unity of experiences differently from the synchronic unity of experiences. But could Dainton have said something more? It is not clear what he can. If the successive experiences are not unified in such a way that they form a larger experience, then we need to know how else they can be unified. If being unified simply means that the successive experiences belong to the same stream of consciousness, then it is question begging. Or suppose Dainton thinks that successive experiences are unified if the earlier experiences *flow* into the later ones, then we need to know what this "flow" amounts to, if it is actually different from the "fusing" kind of unity previously mentioned. And since the co-conscious relationship is a primitive one, it cannot be reduced to a causal relationship either.

It is not clear what other characterization Dainton can give of the diachronic co-consciousness relationship. Thus, it seems safe to say that the characterization of synchronic co-consciousness is analogous to the characterization of diachronic co-coconsciousness, and that diachronic co-consciousness is not compatible with the possibility of fission given the way it is characterized.

What happens to the original person after the surgery

Thus far, I have argued that a stream of consciousness cannot be phenomenally continuous with two later streams of consciousness at the same time. The question now is: does the original self survive the brain transplant

surgery (in which both halves of her brain are removed and transplanted into different bodies)? If we recall the discussion in Chapter 3, there are only three options to take with regards to the survival of the original self (we will ignore option 4, since option 4 actually involves two original selves, which is contrary to stipulation): 1. the self does not survive; 2. the self survives as only one of the post-surgery selves; 3. the self survives as both post-surgery selves.

Since I have argued that it is not possible for a single stream of consciousness to be phenomenally continuous with two later streams of consciousness at the same time, only the first two options are left—the original self must not have survived the surgery or she must have survived as only one of the two selves. I suggest that the second option is the correct one.

To reiterate what I have argued in Chapter 3, if we think that patients can survive surgeries in which half of their (usually diseased) brains are removed, then it does not seem reasonable to think that the original self would not survive this surgery (in which half of his brain is removed and transplanted). The difference between a real-life hemispherectomy surgery and the (fictitious) brain transplant surgery is that in the former, the half of the brain that is removed is *not* being transplanted into another body. But surely what we do with the removed half of the brain has no bearings on whether the original self survives with half of his brain left. Thus it is not reasonable to think that the original self does not survive at all.

In chapter 3, I suggested that it is arbitrary to think that the self survives as only one of the two post-surgery selves when both transplants are counted

successful. This response may be slightly too quick. Imagine the case of a plank of wood floating down a river stream which branches out into two distributaries. When the plank of wood reaches the branching point, which distributary it will float into is probably arbitrary, but being arbitrary does not mean that it would float into *both* distributaries. If we think that streams of consciousness, like the path of the floating plank, cannot take a branching form, then the original self must survive as *only one* of the two selves.

I have also said that both transplants are counted successful, but this assessment is too vague. A brain transplant surgery may be counted a success or a failure depending on the criteria we adopt. Suppose that after the transplant surgeries (as in the original case description given in Chapter 3), the two bodies are able to function relatively well, and each body is able to report on her experiences. If a surgery is successful just because the patients involved are able to function properly and are able to have experiences after the surgery, then the brain transplant surgeries are clearly successful. But a successful surgery in this sense does not entail that the original self survives as two selves. In order for the original self to survive as the two post-surgery selves, not only do the two post-surgery selves have to retain the ability to have experiences, they must also be phenomenally continuous with the original self (if Dainton's Simple Concept account is correct). Yet it is possible that the post-surgery selves retain the ability to have experiences and still not be phenomenally continuous with the original self. Given that it is impossible for phenomenal continuity to take a branching

form, the original self must have been phenomenally continuous with at most one post-surgery selves, even if both surgeries are deemed to be successful.

Thus when a self undergoes a brain transplant surgery, she will survive as only one of the two resulting selves. We may never know which self she actually survives as, but we can be sure that she does not survive as both. Both resulting selves may even insist that they were the original self. But the fact that phenomenal continuity is a non-branching relationship casts doubts on the validity of their claims: at least one of them must have been deluded into thinking that he was the original self.

Chapter 5

Inconceivability of fission from the first-person perspective

I will argue in this section that we cannot conceive of fission from a first person viewpoint. That is to say, even if it is possible to imagine other selves undergoing fission, it is impossible for us to imagine ourselves doing so. Note that I am *not* arguing here that fission is *impossible.* Rather, I am arguing that fission is *implausible*—being unable to imagine ourselves undergoing fission does not make fission impossible because there may be things that are beyond human's imagination, but being inconceivable does point to the fact that it *may be* impossible.

Imagine it is the post-war era. The government desperately needs professionals to help the economy survive. Most of the professionals in the nation however have died in the war. You, a famous neuroscientist, are fatally wounded, but still alive, if barely. The government decides to harvest your brain, split it into the left and right half, and transplant them into two separate bodies, both cloned from your DNA. A friend is at the hospital as an observer.

From your friend's perspective, you are wheeled into the surgery room, and hours later, two humans step out of the room, both looking and behaving exactly like the original you. To your friend, there are a few possibilities.

Possibility One: Both of the humans are not you. The original you have died in the process and two similar looking humans have taken your place.

Possibility Two: You are one of the two. The other human looks exactly like you, but is not actually you.

Possibility Three: Both humans are you.

Possibility Four: There were two selves from the start; in reality, two selves have co-existed in a single body all along, and both have always acted in such perfect unison that no one, including themselves, suspected there were two selves. The surgery spatially separates these two distinct selves.

If your friend is well versed with the relevant philosophical literature, he would know that possibilities One, Two, and Four are not fission. This I have shown in chapter 3. He might want to call them Death, Cloning, and Separation respectively. For the observer, it will only be a case of fission if he can imagine both humans to be a continuation of the pre-surgery human; in other words, possibility Three.

Things are very different from a first-person perspective when we try to imagine the scenario "from the inside". First, I am told that I will undergo a surgery to split my brain into the left hemisphere and the right hemisphere, and following which, each hemisphere will be transplanted. Then I watch helplessly as the surgeon reaches into my skull…

Here are some possible scenarios of what I will experience next: (1) I feel myself slowly fading away. First all the sensory inputs disappear, but this is only to be expected while the brain is being transplanted. Then, to my horror, even my

thoughts and emotions slowly fade away. None of my experiences at the last moment is unified or continuous with any later experiences.

We seem to know intuitively what it is like to have experiences which are unified or continuous with other experiences—it is harder to put in words what this continuity of experiences is like. It is probably accurate to say that we have only had experiences which are continuously flowing into other experiences. This could account for why we find it so hard to describe, apart from using metaphors and synonyms, what this continuity of experiences is. However, we do know what an absence of experiential continuity is like: we do not feel our experiences continuing into other people's experiences. If someone were to tell me that he is experiencing some acute pain right now, it would be immediately obvious to me if my current experiences are continuous with his pain experience. In the surgery scenario described above, if it is obvious to me that my experiences are *not* continuous with the experiences of either of the post-surgery beings, then I do not survive as either of them. As far as I am concerned, this kind of procedure is actually fatal.

Scenario (2): All my sensory inputs disappear. Being a neuroscientist myself, I muse about what would happen after both halves of my brain are transplanted separately. Gradually, my vision is being restored. Other than being unusually weak, I feel pretty much the same as before. To my right, another person looking identical to me is sitting up, examining himself much like what I am doing.

For this case, I did not imagine my pre-surgery experiences being unified with two later selves; all I did was imagining my pre-surgery experiences being unified with the experiences of *one* post-surgery self. If I did not imagine my pre-surgery experiences being unified with two later selves at the same time, then I did not imagine myself surviving as two selves. To imagine the above scenario is merely to imagine myself undergoing cloning, not fission. Scenario (1) and (2) correspond to the possibilities One and Two respectively from the third person perspective; neither of them describes a case of imagining fission from the inside.

There might be an objection at this point: scenario (2) seems to be unfairly described as Cloning. While I, as one of the post-surgery selves, feel myself continuing from the pre-surgery stream of consciousness, and experience nothing of what the other post-surgery self does, this does not rule out the possibility that the other self is in the same situation as I am. If the other self feels himself continuing from the pre-surgery stream of consciousness in the same way that I do, then it seems that both of us have as much claim to being a continuation of the pre-surgery self. If that is so, then we have a genuine case of fission, where one stream of consciousness flows into two distinct and separate streams at the same time.

On first sight, this seems to be a promising line of argument. As distinct and separate selves, neither of the post-fission entities is supposed to share each other's experiences, nor are the experiences of one supposed to flow into the experiences of the other. It seems natural then that neither of us experiences ourselves continuing or surviving as the other.

However, this objection misses the point. It fails to consider the point of view of the pre-surgery self. Granted that we can imagine the case from the inside as either of the post-surgery selves continuing from a single stream of consciousness (though *not* both at the same time), nonetheless, we cannot imagine ourselves as the pre-surgery self continuing *into two* separate streams of consciousness at the same time. To conceive of fission from the first person perspective is *not* to imagine one post-fission self's experiences flowing into the other post-fission self's experiences, but to imagine the *pre-fission self's* experiences flowing into *both* post-fission selves' experiences at the same time. Try as we might, it seems that we simply cannot imagine our experiences doing so.

If we cannot conceive of such a situation from the pre-surgery self's perspective, then we have failed to imagine ourselves undergoing fission. And insofar as we cannot imagine ourselves doing so, the post-surgery selves' claims are dubious: at least one of the post-surgery selves must have been deluded in thinking that his experiences continue from the original stream of consciousness.

A scenario that corresponds to possibility Four from the third-person perspective is similar, in spirit at least, to scenario (2). I will see a self identical to me after the surgery, but that self is not a continuation of the original me. This other self has been sharing the same body with me all along before the time of surgery: perhaps he is the left brain while I am the right brain. In this case, the "me" that is being referred to, both before and after the surgery, is actually the self who is realised by only the right half of the brain. The difference between this

scenario and fission is precisely the fact that the other self who emerges from the surgery *does not* continue from the original me. For fission to have taken place, the two post-surgery selves must continue from a single self. Thus, if there were two selves all along sharing the same body, then even though they are physically separated by the surgery, it is not a case of personal fission.

In order for us to truly imagine fission "from the inside", we have to be able to imagine our experiences flowing into two separate and distinct streams of consciousness. Prima facie, it might seem that we can do that if we imagine our vision gradually dividing. Those who can make themselves go cross-eyed are probably able to imagine this scenario with ease.

However, this is not a case of imagining fission "from the inside". Even after such a procedure where my field of vision divides, I am not two selves—I am merely one self "housed" in two separate bodies. I am now able to view the world through two sets of eyes, manipulate objects with two sets of hands, etc., but I am just a single self. There is fission of my physical body, but nonetheless, I did not survive as two selves—i.e. personal fission did not take place.

It seems that for us to imagine ourselves undergoing fission, we must be able to imagine ourselves becoming two distinct and independent selves. However, in order for us to imagine ourselves *becoming* two distinct and independent selves, we must be able to, at one point of time, imagine *being* two distinct and independent selves. And this seems to be plainly impossible.

Objection from unconsciousness

One might wonder if we would be able to imagine fission from the first person perspective if we imagine ourselves to be unconscious throughout the surgery. It might seem that trying to do so poses no problem at all—I simply wake up after the surgery to the fact that I have undergone fission, without the hassle of me *experiencing* the process at all.

However, it is important to note what we are actually imagining in such a scenario. If someone were to remove half of my brain and transplant it into another body while I am in deep sleep, and assuming that both surgeries (the brain removal surgery and the brain transplant surgery) are successful, I would not wake up thinking that I am *two* selves now. This is because if fission did occur, then the original self would have survived as two *numerically distinct and independent* selves, and each post-fission self would wake up thinking that she is the original self—she would not think that she is two selves *now*. On the other hand, if fission *did not* occur, then there will just be (at most) *one* self after the surgery: either the original self survives as only one self, or she did not survive at all.

Thus, if I imagined myself to be unconscious during the surgery, then I would not have imagined fission from a first person perspective. This is because to imagine fission from a first person perspective involves imagining me *becoming* two selves at the same time. Clearly, for the reasons stated above, being

unconscious during the surgery would prevent me from experiencing the process of becoming two selves.

The problem with imagining an unconscious subject undergoing fission is that there is simply no first person perspective *when* the subject is unconscious. If we were to imagine ourselves being unconscious throughout the surgery, we would not have imagined ourselves becoming two selves—we would merely have imagined ourselves waking up to other people telling us that we have just undergone fission—and this is not the same thing as imagining ourselves undergoing fission. There is no problem with us imagining ourselves before and after fission, but because we are unconscious during the point of fission, we did not imagine ourselves undergoing fission from a first person perspective.

In conclusion

I suggest that the reason why we are unable to imagine ourselves undergoing fission is because we cannot imagine us as one person becoming two. The gist of my arguments thus far is that we are not able to imagine fission from a first person perspective. Admittedly, the failure of imagination from the first person perspective does not entail that fission itself is impossible. There may be things that are beyond human's imagination, yet are logically possible. Whether inconceivability entails impossibility depends on whether the failure of imagination is due to our limits of imagination, or due to a contradiction in the idea.

It is beyond the scope of this paper to argue that the inconceivability of fission from a first person perspective implies that there is a hidden contradiction in the idea of fission. Suffice to note that the fact that we are unable to do so casts doubts on the plausibility of fission. First-person inconceivability of fission forces us to reconsider whether we want to simply assume that fission is un-controversially possible.

Since all that I am arguing is that we are unable to imagine ourselves *undergoing* fission, the possibility of fission occurring while the subject is unconscious does not undermine my arguments at all. However, it does highlight the fact that we cannot rule out fission *a priori* simply because we cannot conceive of it from a first person perspective—fission might still be possible if the subject is unconscious.

That said, the burden of proof seems to lies on the advocates of fission to show why fission procedures must systematically take place only when the subjects are unconscious. Until a non *ad hoc* reason can be given, the fact that fission is inconceivable impugns the plausibility of the concept.

Chapter 6

Ramifications

Imagine that you are walking down a street one day when you accidentally stub your toe. As you cry out in pain, you hear a twin echo from a man nearby. Like you, he is half bent over, holding one of his feet and hopping around on the other, acting exactly like he has stubbed his toe at the same moment. You feel a pang of empathy for him—you know exactly how he feels. But the empathy soon turns to surprise, when the man suddenly turns to you and exclaims, "Hey watch it! My toe hurts when you do that!"

Even if you do believe that his toe hurts when you stub *your* toe, it seems that all that you need to be committed to believing is that stubbing your toe *causes* him to experience *a* pain. Stubbing your toe should not cause him to experience *your* pain. We seem to have the intuition that no two persons can share a single experiential state. In fact, it is hard to make sense of the idea that two persons can share a single experiential state.

Regardless how similar your experiences are to mine, it seems that my experiences are mine and only mine. Experiences that belong to other subjects are at the best qualitatively similar to my experiences, but they can never be numerically identical to them. At least, this is what our pre-philosophical reflections tell us.

However, if Dainton is right, then there will be some degree of phenomenal state sharing between subjects. Recall that fission is defined as a

single stream of consciousness being phenomenally continuous with two later streams of consciousness at the same time. (Refer to **Diagram H** again.) Let us assume that Exp 2 is the experience at the point of fission. Exp 2 is diachronically co-conscious with both Exp 3 and Exp 3'. This has to be true if the two resulting streams of consciousness are continuous with the original stream of consciousness; if Exp 2 and Exp 3 are not directly co-conscious, then they cannot belong to the same stream of consciousness. By similar reasoning, Exp 2 and Exp 3' are also directly co-conscious. At the point of fission then, both post-fission selves together share a single experience—Exp 2.

Thus, if fission is possible, then there will be phenomenal state sharing—the two resulting selves will have to share a single experience, Exp 2. I suggest that this is a consequence that should be avoided. If phenomenal state sharing is possible, then experiences would no longer be uniquely "owned". Pain, and any other experiential states, would no longer hold the special status of being only and necessarily mine. While this does not have any obvious practical implications, it does violate certain common intuitions. If you stub your toe, and someone beside you exhibits the exact same pain-behavior at the same time, you would not think that he is feeling your pain. At most, you think that he is feeling a pain which is qualitatively identical to yours or a pain which is caused by your toe-stubbing.

There will be some who think that if fission is possible, then phenomenal state sharing would no longer be strange. Phenomenal state sharing is only strange because we are thinking of humans as non-branching entities. If the streams of

consciousness can split up like amoebas, then we should come to expect that human beings can share phenomenal states as well.

However, if we have independent grounds for believing that fission is implausible, then instead of accepting two absurdities—fission and phenomenal state sharing—we would do better to deny both at the same time. And it is obvious from the discussion in the previous chapter that we do have independent reasons for believing that fission is implausible.

So much literature has grown around the topic of fission that it is almost forgotten how counter-intuitive personal fission is. It is not supposed to be an advantage of an account of personal identity to be able to account for fission. Most psychological continuity accounts try to make fission palatable, owing to the fact that their accounts appear to be committed to the possibility of fission. According to psychological continuity accounts, a self survives over time as another self if and only if the psychological states of the earlier self are causally related in an appropriate way to the psychological states of the later self. Objectors to the psychological continuity accounts then point out that it is possible for an earlier self to be so related to two distinct selves which exist at the same time. In other words, the psychological continuity accounts seem to be committed to the possibility of fission.

However, fission does not seem to be an easy bullet to bite, given how hard it is to make sense of a single self becoming two simultaneously existing selves. If what I have argued in the previous chapter is correct, fission is inconceivable from a first person perspective. Since fission appears to be

conceptually doubtful, we should avoid commitment to it as far as possible. Insofar as psychological continuity accounts imply that fission is possible, we have one less reason to believe in them.

In the previous chapters, I have argued that Dainton's account is incompatible with the possibility of fission. This means that under Dainton's account, it is not possible for a person to be phenomenally continuous with two or more selves at the same time. If what I have argued thus far is correct, then it is an advantage of Dainton's account that it is incompatible with the possibility of fission. Therefore if all things are equal, we ought to favor Dainton's account over psychological continuity accounts and other personal identity accounts that are compatible with the possibility of fission.

In this paper, I have argued for two things: firstly, Dainton's Simple Conception account is not compatible with the possibility of fission, and secondly, fission is not as plausible as commonly made out to be. The two conclusions together imply that Dainton's account is not without its merits, and should be considered a serious contender in today's personal identity debate.

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